ANNUAL REPORT

Department of Energy and Forestry

Fiscal Year: April 1, 1989 - March 31, 1990

91-05318/

Annual Report of the Prince Edward Island Department of Energy and Forestry

for the fiscal year ended

March 31, 1990

Honourable Barry Hicken, Minister

Honourable Barry Hicken
Minister of Energy and Forestry

TO HER HONOUR

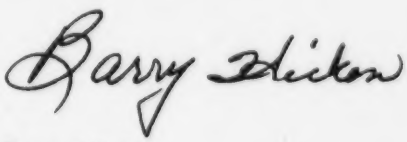
THE HONOURABLE MARION L. REID
Lieutenant-Governor of Prince Edward Island

May It Please Your Honour:

I have the honour to submit herewith the Report of the Department of Energy and Forestry for the fiscal year April 1, 1989 to March 31, 1990.

I have the honour to be, Madam,

Your obedient servant,



Barry Hicken
Minister of Energy and Forestry

The Honourable Barry Hicken
Minister
Prince Edward Island Department of Energy and Forestry

Sir:

I have the honour to submit the Annual Report of the Department of Energy and Forestry for the fiscal year April 1, 1989 to March 31, 1990.

Respectfully yours,

J. Charles Campbell
Deputy Minister

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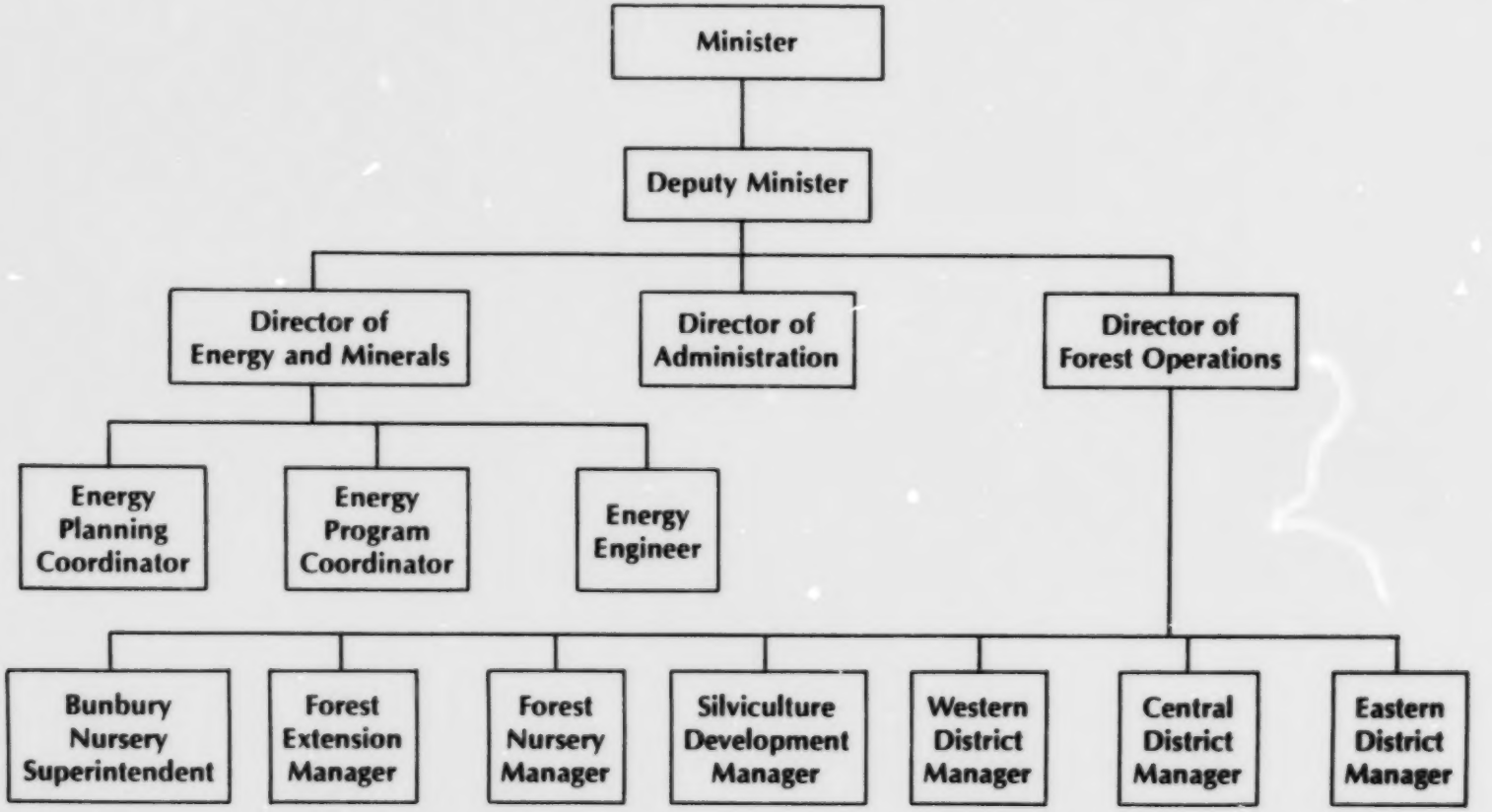
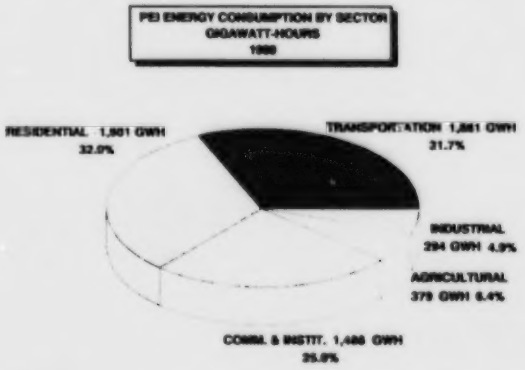
I. STRUCTURE OF THE DEPARTMENT



II. ENERGY AND MINERALS BRANCH

WAYNE MacQUARRIE
Director
Energy and Minerals Branch



Introduction

The Energy and Minerals Branch of the Prince Edward Island Department of Energy and Forestry is responsible for the development and overall implementation of energy policy for the provincial government. This includes: evaluating progressive energy technologies and supply infrastructure appropriate for Island communities; ensuring secure and fairly-priced energy supplies for Islanders; providing information-based programs to the public concerning energy efficiency and renewable, alternate energy; and encouraging and regulating the exploration for minerals, oil and gas within the Province.

During the period of April 1, 1989, and March 31, 1990, the Energy and Minerals Branch was involved in several matters crucial to the Province's economic well-being including: ensuring Islanders have access to secure and fairly-priced energy sources by means of regulatory control; developing and demonstrating local renewable energy resources, i.e. biomass fuels; maintaining inter-governmental relations to represent the province's interests with respect to energy; and providing public information programs to promote the use of energy efficiency and alternate energy sources.

Island Energy Consumption in 1989

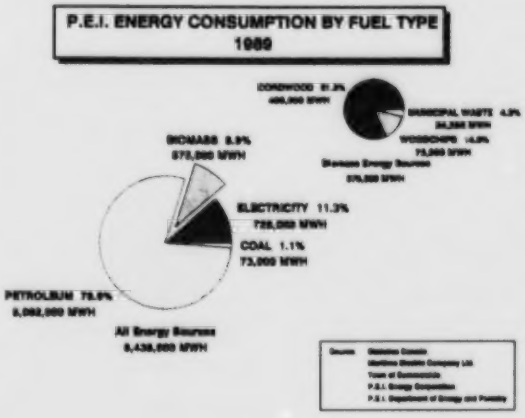
Energy Consumption by Sector

In 1989, Islanders consumed 6,438 GWH of energy. The residential sector was the largest user of energy, consuming 32% (or 1,901 GWH) of the total energy consumed on the Island. The second largest sector, transportation, accounted for 31.7% (1,881 GWH) of total energy consumption on Prince Edward Island in 1989.

The third group of energy consuming sector(s) was the combined commercial and institutional sector which consumed 25.0% (1,486 GWH) of the Island's energy consumption. The agricultural and industrial sectors consumed 6.4% (379 GWH) and 4.9% (294 GWH), respectively.

Energy Consumption by Fuel Type

In 1989, imported petroleum products, largely in the forms of gasoline, diesel fuels, and heating oil, constituted 78.6% of the energy consumed on Prince Edward Island. Electricity, either imported directly via submarine cable or generated on-Island, provided an additional 11.3%. Locally produced wood-biomass products provided almost all of the remaining energy supply.



Wood Biomass - Our Indigenous Energy Source

Because Prince Edward Island imports in excess of 100 million dollars worth of petroleum products each year, great strides have recently been made to develop our indigenous energy resource - wood biomass.

Wood biomass, in the form of firewood, has always been a major source of energy for Island homes. But, woodchips - tree material passed through a chipper to give uniform particles - are proving to be an economical and reliable energy source which lessens the province's dependency on imported energy.

Currently, there are approximately seven million green tonnes of biomass suitable for harvesting available from mature forest stands within the Province. As a result of Government policy to facilitate the utilization of this resource to improve the condition of Island woodlots, schools, hospitals and other public institutions from across the Island have already converted to the use of biomass fuels for space heating. Also, several buildings within the Charlottetown area are connected to district heating systems fuelled by woodchips.

The economic benefits of utilizing wood biomass lies not only in the comparison of its cost with that of the displaced imported energy source; but as woodlot owners are given access to a market for poor quality wood, increased employment is generated in the Island's forest industry and entrepreneurial opportunities are presented to individuals and firms which manufacture and supply products related to the woodchip industry. In short, dollars that normally exit the province are instead being circulated throughout the local economy.

A positive effect of burning woodchips for energy is the decrease in pollutants released into the environment. For example, wood contains a small fraction of the sulfur found in most fossil fuels. Acid rain, which is damaging to the land and water, is formed from the release of sulfur and its combination with oxides. Fossil fuel combustion also increases the CO_2 levels in the atmosphere, heightening concerns of global warming and changing climatic patterns. The Province's current practice of reforesting woodlands after biomass harvest with faster growing, genetically superior seedlings ultimately produces no net gain of CO_2 into the atmosphere when woodchips are burned.

Security and availability of supplies are key components when considering an energy source. Unlike nonrenewable fossil fuels imported from other countries, wood biomass energy is based on a locally-produced renewable resource. Using wood biomass for energy presents a bright future for the Island.

CANADA-PRINCE EDWARD ISLAND COOPERATION AGREEMENT ON ALTERNATE ENERGY DEVELOPMENT AND ENERGY EFFICIENCY (1989-94)

Left to Right: Hon. Elmer MacKay, Minister responsible for the Atlantic Canada Opportunities Agency; Hon. Joseph A. Ghiz, Premier of P.E.I., Hon. Jake Epp, Minister of Energy, Mines and Resources, Canada; and Hon. Barry Hicken, Minister of Energy and Forestry on the signing of the Canada-P.E.I. Cooperation Agreement on Alternative Energy Development and Energy Efficiency.

One of the highlights in 1989-90 was the signing, on February 12, 1990, of the Canada-Prince Edward Island Cooperation Agreement on Alternate Energy Development and Energy Efficiency (1989-94). This agreement follows the completion of the Alternate Energy Development Agreement (1984-89) that aided the development of alternate energy resources in the province. The total funding for this Agreement is comprised of $5,465,000 from the Government of Canada and $2,340,000 from the Government of Prince Edward Island.

Purpose and Objectives of 1989-94 Cooperation Agreement on Alternate Energy Development and Energy Efficiency

The purpose of this Agreement is to implement specific programs for the encouragement of alternate energy utilization and energy efficiency measures on Prince Edward Island.

Agreement objectives are:

(a) to improve productivity and competitiveness of the commercial, industrial and agricultural sectors of the Prince Edward Island economy through establishing biomass fuel as a secure and competitively-priced alternative to imported fossil fuels;

(b) to enhance the strategic energy infrastructure and augment energy security and energy-use efficiency in the province;

(c) to increase production of renewable energy from local resources and to hasten the adoption of innovative energy production and conservation technologies; and

(d) to stimulate local employment, entrepreneurial and industrial opportunities in woodchip harvesting and transportation, as well as the biomass heating system fabrication and engineering by supporting the continued growth of the biomass energy industry on Prince Edward Island.

Anticipated Benefits of the Agreement

The following benefits are anticipated from the implementation of the Agreement:

(a) an increase of the annual use of biomass fuels by as much as 30,000 tonnes, while displacing petroleum use valued at $2.0 million annually;

(b) a participatory approach to feasibility planning of a proposed wood-based cogeneration/district heating project for downtown Charlottetown;

(c) an increase in alternative fuel use to approximately 16% of total Prince Edward Island consumption for heat and process energy;

(d) a reduction of electricity demand by at least 5 megawatts and a continuation of the trend to increase energy efficiency;

(e) a further creation of 75 to 100 person years of employment; and

(f) an establishment or growth of several supply, manufacturing and service firms.

Description of Program Elements

1. **Energy Diversity Program** - for technical and financial support to aid the commercial/ institutional/industrial/ municipal sectors in converting to biomass-fuelled heating systems.

2. **Energy Efficiency Program** - for initiatives aimed at the efficient use of the existing energy supply, and particularly of electrical energy.

3. **Wood Supply Systems Program** - for the assessment, development and financial support of a wood supply infrastructure most conducive to the province's priorities of increased employment and entrepreneurial opportunities harmonious with the sustainable development of rural communities.

4. **Engineering and Policy Studies Program** - for the analysis required for consideration in the selection of energy policy and technological options which include district heating/ cogeneration feasibility analysis.

5. **Communication and Programs** - for facilitating communication between program management/ clients as well as energy producers/consumers.

6. **Evaluation Program** - for evaluation of the Agreement objectives and programs by collecting data on Prince Edward Island's energy supplies, energy usage, energy demand, and the degree to which these have been satisfied by Agreement programs on energy efficiency and alternate energy.

Biomass Harvesting and Roadside Chipping Demonstration

Under the Wood Supply System Program of the Cooperation Agreement on Alternate Energy Development and Energy Efficiency, the Energy and Minerals Branch conducted a Biomass Harvesting and Roadside Chipping Demonstration in cooperation with the Prince Edward Island Energy Corporation and the Forestry Branch.

Harvesting took place on two private woodlots enrolled in the Private Lands Program of the Forest Resource Development Agreement (F.R.D.A.) and a Crown-owned property. All sites had been slated for reforestation with superior quality seedlings from the provincial tree nursery. Approximately 50 hectares (123 acres) were harvested during a six week period in February and March, 1990.

The Roadside Chipping and Harvesting Demonstration proved that high volume roadside chipping is feasible on Island woodlots even considering the relatively small harvest sites to be encountered. During twenty-two days of chipping, approximately 6500 green tonnes of chips were produced for sale to the Prince Edward Island Energy Corporation.

Petroleum Products Act

The *Petroleum Products Act* dates back to 1947 when the government of the day was concerned about the abundance of grocery stores and other businesses that sold gasoline but did not offer automotive related services to the public. Legislation was enacted that allowed the public an opportunity to voice its opposition or support for retail gas license applications. An applicant also had to convince the Public Utilities Commission that public convenience and necessity warranted the granting of such a license. The overall effect of the legislation was the decline of retail gas outlets that did not offer automotive service to the motoring public.

The *Petroleum Products Act* and its regulations underwent few changes until 1987, when it was amended to grant the Public Utilities Commission the authority to regulate the pricing of petroleum products on Prince Edward Island. In 1989, a new version of the *Petroleum Products Act* was presented in the Legislature. It contains clear definitions regarding the rules and procedures to be followed by heating fuel and/or motor

fuel wholesalers, wholesaler/retailers, retailers and the Public Utilities Commission with respect to licenses, prices, hearings, investigations and Public Utility Commission orders.

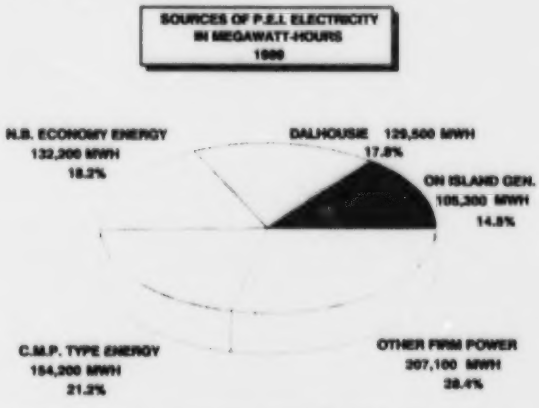
Regulatory Matters

The Minister of Energy and Forestry is responsible for the *Electric Power and Telephone Act*, which controls those public utilities which convey or transmit telephone messages or produce, transmit, distribute or furnish electric energy either directly or indirectly to or for the public. In 1989, however, as a result of a decision by the Supreme Court of Canada, the federal regulatory body, the Canadian Radio and Telecommunications Commission is now responsible for administering those regulations pertaining to all private telephone utilities in Canada.

With respect to electric power regulations, the Minister, on behalf of the general public, continues to monitor prices and intervene, when necessary, in hearings on applications by Maritime Electric Co. Ltd. to the Public Utilities Commission.

Electrical Energy on Prince Edward Island

The Energy and Minerals Branch continued to work with officials of the Province's two utilities: Maritime Electric Co. Ltd. and the Town of Summerside to ensure adequate and fairly-priced electricity supplies to the Island's electrical consumers.



Similar to previous years, Prince Edward Island continues to receive most of its electrical supply from off-Island sources via submarine cable. In 1989, Prince Edward Island's 45,400 residential and 9,800 non-residential electrical customers consumed 728,300 MWH of electricity. This supply was made available by a variety of sources: Purchases from Hydro-Quebec and other firm sources of power constituted 28.4% or 207,100 MWH of electricity; and purchases based on prices determined by an agreement between New Brunswick Power and Central Maine Power (CMP) amounted to 21.2% or 154,200 MWH of supply. (This purchase was enabled by a National Energy Board ruling.)

Other sources included "N.B. Economy Energy," which is electricity produced in New Brunswick in excess of that Province's demands, providing 132,200 MWH or 18.2% of supply; and Maritime Electric Co. Limited's part-ownership in the Dalhousie, New Brunswick, coal-fired plant, another 129,500 MWH or 17.8%. Finally, the total of on-Island generating capacity, including facilities located in Charlottetown, Borden and Summerside, produced 105,300 MWH or 14.5% of the Island's electrical supply.

The Manufacturing and Processing Industries Electricity Assistance Program

This program offered qualifying industrial customers a 20 per cent rebate at source on their monthly electrical bills to enable Island firms to compete with their off-Island competitors. Approximately 88 firms took advantage of this program during the year.

Intergovernmental Relations

The Energy and Minerals Branch sends representatives to meetings and conferences sponsored by the Northeast International Committee on Energy (NICE). This organization deals with several energy-related issues that particularly affect the New England and the Eastern Canadian region.

The Energy and Minerals Branch's membership in the Interprovincial Advisory Council on Energy (IPACE) has enabled the Government of Prince Edward Island to have a strong voice in the collective efforts by the provinces to influence federal government policy on matters of common importance to the various regions. Subcommittees include: Conservation and Renewable Energy Subcommittee, and its subcommittee on education activities; and the Demand Restraint Subcommittee.

Energy Month 1989

The Energy and Minerals Branch sponsored and delivered "Energy Month 1989." Representatives of the Branch travelled across the Island promoting energy efficiency and alternate energy in a variety of sectors.

Home energy efficiency seminars were presented at Montague, Charlottetown and Summerside. Pro-Trucker seminars, promoting energy efficiency in the transportation industry, were sponsored by the Branch and delivered by the Commercial Safety College of Nova Scotia in Charlottetown and Montague. Shopping mall displays in Charlottetown , Summerside and Montague, which included the "Comfort Plus" Home Energy Efficiency display and the Biomass Energy display, featured a video presentation depicting the biomass fuel industry on Prince Edward Island.

Public Information Programs

1. **The "Comfort Plus" Information Program:** The Energy and Minerals Branch has an information program designed for Island homeowners to increase energy efficiency in their homes. The program consists of an information display and a series of booklets that include advice on "Air Leakage Control", and "Condensation and Ventilation". Technical advice concerning home energy efficiency topics may be obtained by calling 1-368-5010 Toll Free on Prince Edward Island.

2. **Furnace Efficiency Kits:** Homeowners may assess their home heating systems using one of seven efficiency test kits available on loan, free of charge, from the Branch Office in Charlottetown and from three Regional Services Centers (O'Leary, Summerside and Souris).

3. **Hardware Store Book Shelves:** The Energy and Minerals Branch developed and distributed attractive bookshelves to be used as a point-of-sale application in retail outlets which sell energy conservation material and products. The shelves contain free copies of the "Comfort Plus" Information series promoting home energy efficiency to the "do-it-yourselfer" as well as the professional renovator.

4. **Energy Cost Index:** Each month, the comparative costs for fuel oil, gasoline, electricity and propane on Prince Edward Island are recorded and made available to the public upon request.

5. **Weekly Gas Price Survey:** A weekly survey of retail gas prices of stations within the greater Charlottetown area is compiled. This information is shared with Energy, Mines and Resources in Ottawa for publication in their national weekly pump price survey. Average weekly retail prices for specific fuel blends are available to the public upon request through the Energy and Minerals Branch.

Educational Programs

1. ***Energy Technologies for Prince Edward Island:*** In conjunction with the Department of Education, the Energy and Minerals Branch has prepared reference books and supplementary materials focusing on energy technologies for use at the Grade X level in the high school science curriculum. The Branch has developed a Student Workbook to augment the earlier production of two course booklets: *Energy Technologies on P.E.I.*, Parts I and II. The program is being piloted in selected schools across the province.

Student Reference books and Handbook, ***Energy Technologies: Options for P.E.I.*** *prepared for classroom use. Materials available by contacting the Department of Energy and Forestry.*

2. **"Dr. Five":** During April-May, 1989, the Energy and Minerals Branch sponsored the Theatre P.E.I. production of "Dr. Five, or How I Stopped Procrastinating and Learned to Love Biomass Energy". The theatre toured Island junior high schools. Cartoon leaflets that summarized the locally written script were also distributed.

3. **"Learning Energy and Forestry" Newsletter:** The Energy and Minerals Branch co-sponsors with the Forestry Branch a tri-annual publication which promotes the learning of selected energy and forestry related issues. The newsletter is targeted for a junior high school readership and covers topics such as energy efficiency, forest management and environmental concerns.

4. **P.E.I.T.F. Convention:** The 1989 Prince Edward Island Teachers Federation (PEITF) annual convention was held in October at the CP Prince Edward Hotel. The Energy and Minerals Branch displayed educational materials pertaining to energy along with the "Comfort Plus" information display and the Biomass Energy display.

5. **Stratagem:** Stratagem is a computer-simulation game designed for the classroom which demonstrates the many interconnections among various development issues, and the long-term effects of different policy options on energy, the economy, the environment and human welfare. The Energy and Minerals Branch loans games to teachers on request.

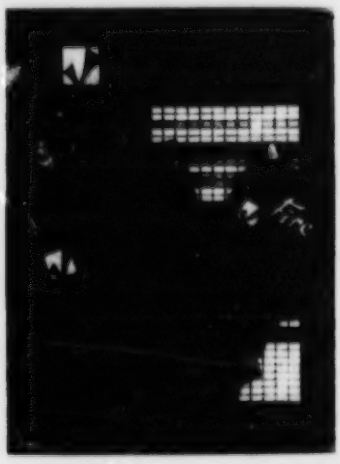
6. **P.E.I. Science Olympics:** Teams of Grade X science students from Island high schools participated in the 1989 P.E.I. Science Olympics co-sponsored by the Departments of Energy and Forestry, and Education. The Minister of Energy and Forestry presented a trophy to the team with the highest points accumulated by solving scientific and technological problems.

Grade X students at Charlottetown Rural High School conducting an experiment as part of the Energy Technologies: Options for P.E.I. science program.

Community Programs

1. **P.E.I. EnerPool:** The EnerPool Program, which began in 1978, continues to demonstrate the potential for energy conservation using ride-sharing transportation. Four routes provide weekday transportation to and from Charlottetown. It is estimated that each route reduces gasoline consumption by up to 47,000 litres per year.

2. **Biomass Conversion Inspection Publications:** A follow-up to the 1988-89 Biomass Conversion Inspection Program was the production and publication of a series of fire safety information literature for biomass fuel and other wood-fired installations. A booklet, pamphlet and wall checklist are available to the public due to the cooperative efforts of the Branch and the Office of the Provincial Fire Marshall.



Fire Safety Checklist, Handbook, and Brochure prepared for operators of biomass-fuelled combustion units. These materials are available by contacting the Department of Energy and Forestry.

3. **1990 Plan your Home Day:** In March of 1990, the Energy and Minerals Branch provided technical and financial support for the 1990 Plan your Home Day sponsored by the Construction Association of P.E.I. and the P.E.I. R-2000 office. The purpose of the event was to promote the incorporation of energy efficiency measures into the design of new housing stock within the Province.

4. **P.E.I. Parade of Homes:** The Energy and Minerals Branch participated as a sponsor to the P.E.I. Parade of Homes. Across the Province, newly constructed R-2000 homes featuring state-of-the art energy efficient techniques were promoted.

GEORGE MASON
Energy Planning
Coordinator

VIRGINIA BULGER
Energy Programs
Coordinator

III. FINANCIAL REPORT

DEPARTMENT OF ENERGY & FORESTRY
EXPENDITURE SUMMARY
FISCAL YEAR 1989-1990

EXPENDITURES		
Departmental Management	$ 378,617	$ 378,617
Energy & Minerals Branch		
Branch Management	$ 427,468	
Cooperation Agreement	326,307	
Electrical Rebate Relief Program	1,804,577	$2,558,352
Forestry Branch		
Branch Management	$1,239,837	
Crown Land Forest Improvement	371,136	
Bunbury Nursery	217,575	
Firefighting	80,976	
Hedgerow Shelterbelt	35,630	
Headquarters Administration	150,468	
Extension	96,860	
Silviculture Development	158,680	
Industry Development	70,245	
Biomass Inventory	336,163	
Seedling Production	450,916	
Eastern District - Crown Land	104,139	
Central District - Crown Land	30,329	
Western District - Crown Land	80,025	
Eastern District - Administration	297,555	
Central District - Administration	237,498	
Western District - Administration	335,624	
Private Land Program	1,067,193	$5,360,849
Departmental Total		$8,297,818
REVENUES		
Departmental Management		
Energy & Minerals Branch		
Branch Management	$ 8,639	
Cooperation Agreement	29,701	$ 38,340
Forestry Branch		
Bunbury Nursery	137,446	
Hedgerow Shelterbelt	8,635	
Headquarters Administration	75,434	
Silviculture Development	114,744	
Industry Development	38,702	
Forest Biomass Inventory	256,988	
Seedling Production	296,134	
Eastern District - Crown Land	130,240	
Central District - Crown Land	36,660	
Western District - Crown Land	79,477	
Eastern District - Administration	181,222	
Central District - Administration	154,323	
Western District - Administration	208,160	
Private Land Program	881,915	$2,600,080
Departmental Total		$2,638,420

IV. FORESTRY BRANCH

Introduction

The Forestry Branch of the Department of Energy and Forestry is responsible for the development and implementation of forest management programs on private and Crown lands within the province, as well as the maintenance and updating of forest inventory information, tree improvement operations, industrial development of the forest sector, information and education programs for school children, woodlot owners, and the general public, and production of tree seedlings for reforestation efforts. Forest fire control and the management of Bunbury Nursery are also responsibilities of the Department.

Forest management on Prince Edward Island provides many challenges and opportunities. In the past, over harvesting, the lack of resource management, and a lack of investment led to the steady decline of this once vital resource.

However, this decline is tempered by the Island's climate and soils, both of which are well suited to tree growth. Prince Edward Island's growing conditions are among the best in Canada and lend themselves to above average forest production.

Proper and sensitive forest management can improve the aesthetic quality of the Island landscape. Thinnings and properly managed harvests remove unsightly dead or deformed trees, encourage a healthier forest, and provide saleable products for the Island's forest industry.

Since the turn of the century, several different attempts to manage the resource were made. Unfortunately, these plans suffered from inadequate funding, and a lack of landowner support. However, with the introduction of the first five-year forest resource development in 1983 and its subsequent renewal in 1988, the funding, leadership, and infrastructure needed to manage the resource were firmly established.

CANADA-PRINCE EDWARD ISLAND FOREST RESOURCE DEVELOPMENT AGREEMENT (FRDA)

Total funding for the 1988-93 F.R.D.A. is $24 Million and is cost-shared by the Government of Canada and the Government of Prince Edward Island, 59% and 41% respectively.

Purpose and Objectives of the 1988-93 Forest Resource Development Agreement

The purpose of this Agreement is to undertake programs of intensive forest management, research and development, technology transfer and public information and education on Prince Edward Island.

Agreement objectives are:

a) to promote the appropriate utilization of the available resource and to ensure prompt reforestation of harvested areas with desirable species;

b) to improve the growth rate of high quality products in existing stands;

c) to improve the age-class structure of the softwood covertype;

d) to develop and foster a sense of forest management responsibility and capability within the private sector, including private woodlot owners and the industry;

e) to investigate and promote industrial development and marketing opportunities in support of the intensive forest management objectives;

f) to improve the quality of the existing forest data base and facilitate its updating, to ensure the intensive management program goals are evaluated, modified and achieved in an effective and efficient manner;

g) to undertake research and development in support of intensive forest management programs, forest protection and forest utilization, and to introduce and transfer technologies appropriate to the forest industrial and resource environment;

h) to improve the public perception of forestry on Prince Edward Island and, in particular, the public's understanding of the problems and opportunities which face the sector and the significant commitment required on behalf of the private sector by governments to ensure sustainable development of the resource;

i) to promote increased utilization of the resource by all forest users; and

j) to contribute to the economic development of the Island's forest sector, including the improvement of employment opportunities in the sector, in order to increase the contribution of the sector to the provincial and national economies.

Highlights of 1989-90 included: completion of the irrigation system at the Dover Seed Orchard, avifaunal survey of forest management areas, completion of a Youth Education Plan, and preparations for the 1990 forest inventory.

"Privately Managed Forest" signs have become popular with woodlot owners who manage their forests. These signs are prominently displayed on managed woodlots across the province.

EASTERN DISTRICT

The Eastern District extends eastward from Orwell in the South, to Savage Harbor in the North. It contains a well established forest industry with one of the largest sawmills in the province, and has good access in the summer months to pulp mills in Nova Scotia.

In 1989-90, work on private land included the completion of 266 ha. of site reclamation, 375 ha. of site preparation, and 151 ha. of plantation maintenance. An additional 49 ha. of softwood thinning, and 31 ha. of hardwood thinning rounded out the stand improvement work on private land.

Forest infrastructure work included the establishment of 37 km. of boundaries, and 34 km. of roads. Contractors and woodlot owners also installed 21 culverts and built bridges with *10 m²* of stream entrance.

Stand renewal and improvement work on Crown land accounted for 66 ha. of site reclamation, 105 ha. of site preparation, 25 ha. of softwood thinning, and 4 ha. of hardwood thinning. Crown land infrastructure work included 12 km. of roads, 2 culverts, and 10 m² of stream entrance for bridges.

District staff assisted with fire services for C.J.'89, gave tours and lectures to local schools during National Forest Week, and gave a tour to local Members of the Legislative Assembly. Staff time was also spent assisting Island Christmas tree growers upgrade their industry, and working with 4H groups in the district.

CENTRAL DISTRICT

Central District covers the middle part of the Island stretching from Vernon/Savage Harbour in the East, to Borden/Stanley Bridge in the West. While it is the largest district by land area, due to the amount of agricultural land and urbanization it has the least amount of forested land.

In 1989-90 private land staff provided a wide range of services for woodlot owners. Approximately 135 hectares of poor quality stands were salvaged, and 221 ha. of site preparation were completed. The 49 ha. of hardwood thinning complimented the 50 ha. of softwood thinning finished by woodlot owners and contractors.

Over 323,000 tree seedlings were planted on a variety of sites, and 24 kilometers of roads were constructed. In order to meet strict environmental guidelines for road construction, 15 culverts and a total of 10 m² of entrance bridges were built. These structures are designed to allow the free flow of water during periods of maximum flow.

Crown land work included 40 ha. of site preparation, 7 ha. of site reclamation, and 14 ha. of planting. Approximately 2.5 ha. of hardwood thinning were done, and 3.6 km. of roads, and 7 km. of boundaries were constructed.

Central District staff planned for and coordinated the emergency fire fighting services for C.J.' 89, and provided wild fire suppression courses for volunteer fire brigades. Several hundred people visited the District's information booth at a local shopping mall during National Forest Week.

Presentations were given to Nova Scotia Department of Lands and Forests on Integrating Wildlife and Forest Management. Discussions were held on watershed management with the Alexandria C.I.C. Conservation Zone.

Nesting boxes for Tree Swallows and Barred Owls were constructed and set out on Crown land properties, and several experimental strip cuts were established. District staff developed and published several brochures and booklets on a variety of forestry topics, and assisted the Island Nature Trust with a hardwood transplanting workshop.

WESTERN DISTRICT

The boundaries of the Western Forest District extend from Borden/Stanley Bridge in the east, to land's end at North Cape. This district combines some poorly drained sites with some of the best agricultural land in the Province. The District's total forested area is approximately 94,000 ha. It contains the Island's only commercial maple sugar operation, a large sawmill operation in St. Chrysostome, and excellent year-round access to mainland pulpmills.

Private land work in fiscal 1989-90 resulted in 126 ha. of site reclamation, 52 ha. of softwood thinning, and 20 ha. of hardwood thinning being completed. District staff also accomplished 229 ha. of site preparation, 145 ha. of plantation maintenance, and planted 379,900 tree seedlings.

Almost 30 kilometers of roads were constructed, along with bridges totalling 19 m^2 of entrance area, and 37 km. of boundary line establishment.

Crown land activities included 62 ha. of site preparation, 64 ha. of planting, and 52 ha. of plantation maintenance. Thinning was completed on 8.5 ha. of softwood and 1 ha. of hardwood covertypes, and site reclamation was done on 5 ha. of poor quality stands.

Forest infrastructure work included 2.4 km. of roads, 20 km. of boundaries, and 3 culverts constructed on Crown land properties. An additional 33 kilometers of old boundary lines and 2 m. of existing roads were maintained.

In 1989-90 Western District staff gave tours and lectures during National Forest Week, and assisted a local maple syrup producer with tours of his operation. A course on forest management was offered at a local community school, and the District worked closely with Forest Extension to develop and promote the annual Woodlot Management and Equipment Exhibition in Foxley River.

BUNBURY NURSERY

Bunbury Nursery provides ornamental plant stock for beautification projects, information on landscaping, and information on insect and disease problems pertaining to household and lawn plants.

In January and February, a series of four seminars was given on the identification and prevention of Dutch Elm Disease (D.E.D.). These seminars were designed to assist Island communities set up D.E.D. prevention programs before the disease affects these areas.

Staff also answered requests for information from a wide variety of sources. Many requests were made through direct contact with the Nursery, while others were generated through contacts with the Forestry Branch and the Department of Agriculture.

The Nursery provided resource people for community schools, flower shows, and assisted the Rose Society, the Rural Beautification Society, and Charlottetown Area Beautification Committee with several special and ongoing projects. Staff also conducted trials on 137 varieties of bedding plants, and evaluated 122 varieties of shrubs.

The Landscape Assistance Grant Program provided support to eight projects, two in King's county and six in Queen's county. In order to meet the expanding needs of Island municipalities, the Urban Forestry Program was expanded.

Revenue generated by nursery sales in 1989-90 was $137,446.

FOREST INFORMATION AND EDUCATION

Emphasis was placed on the development of a Youth Education plan in 1989-90. This Plan was developed in cooperation with Forestry Canada, and has been attached to the five-year F.R.D.A. plan for Forest Information and Education.

The Department, in cooperation with the Department of Education is developing a forestry module for the Grade 10 Science, Technology and Society (S.T.S.) program. The S.T.S. Forestry Module should be completed in 1991.

Learning Energy And Forestry (L.E.A.F.) continued to be popular with junior high school teachers and their students. L.E.A.F. encourages students to explore energy and forestry issues using articles, games, activities, and field trips.

Three Woodlot Management Courses were offered to woodlot owners through Holland College. Extension staff also arranged and conducted the annual Woodlot Management and Equipment Exhibition in Foxley River.

Assistance was given to the Central Prince Forestry Association to help them develop displays for National Forest Week, and the Island Nature Trust received support for the development of an interpretive trail system at Royalty Oaks.

Work continued on "WOODLOT VIEWS," the newsletter for woodlot owners, and 52 radio shows were developed and aired for "AGRICULTURE TODAY." Both projects feature topics which promote forest management to woodlot owners and raise the awareness of the general public.

The Forestry Exhibit trailer visited many different community fairs and events throughout the summer of 1989. A record number of visitors (34,250) came to see exhibits based on forest and wildlife management.

A new trail was established at the New Harmony Demonstration Woodlot, to serve as a hiking trail in summer, and as part of the cross country skiing system in winter. Staff also interpreted the Flood Trail on the Brookvale Demonstration Woodlot.

Extension staff also worked with their counterparts in the other Maritime provinces to develop and implement a Woodlot Owner of the Year Award. This award will recognize and reward outstanding achievement by woodlot owners in the field of forest management.

Staff began work on SILVILOG'90, an international forest exhibition to be held in Nova Scotia in September, 1990. This exhibition is one of the largest of it's kind, and will attract visitors from around the world to learn more about forestry in the Maritimes.

INDUSTRIAL DEVELOPMENT

Staff of the Industrial Development section work with silvicultural contractors and sawmillers to improve productivity in the industry, and to assist with the recruitment and training of forest workers.

The Silviculture Worker course at Holland College had 12 students graduate in 1989-90. Because of continuing problems with low recruitment levels, a study was initiated to address the shortage of skilled silviculture workers. Funding was also directed towards a forest contractor "think tank" on the shortage.

Assistance was given to two contractors to upgrade their workers' skill level, and technical advice was offered to 12 individuals. The Small Equipment Loan program provided six pieces of equipment on a loan basis to 23 people. A pesticide safety course was also offered to contractors and staff involved in herbicide application on private and Crown lands.

1989-90 was an excellent year for wood exports. Island contractors exported almost 27,000 cords during the season.

Work was initiated on a pre-commercial thinning time trial. This study will assist in the determination of rates paid for softwood thinnings.

Time trials were also conducted on the Cable Logger System. It was tested by a forest contractor to determine its productivity, and suitability to Island situations. Blue prints were also developed for this piece of equipment.

J. FRANK GAUDET TREE NURSERY

The J. Frank Gaudet Tree Nursery shipped 2.06 million trees in 1989. Black spruce, white spruce, red pine, white pine, Austrian pine, larch, and balsam fir were planted on private and Crown land woodlots.

The main tree seedling production facility on Prince Edward Island is the J. Frank Gaudet Tree Nursery in West Royalty. It consists of two gutter-connected, double-layer polyethylene greenhouses with a combined growing space of 3,700 square meters (approximately 1 acre).

Seven softwood species are currently under production at the nursery. They include white spruce, black spruce, red pine, white pine, Austrian pine, eastern larch, and balsam fir. Each of these species was chosen based on suitability to Island growing and market conditions. In 1989-90, the total number of seedlings planted on private and Crown land was 2,060,286.

Cone collection netted 115 bushels of red pine and 75 bushels of Austrian pine. The seed from these cones will used to produce seedlings for future reforestation programs across the Island.

In 1988 the Nursery assumed additional responsibilities. After reaching an agreement with the Department of Public Works, the Forestry Branch is now responsible for the maintenance of all the buildings, and greenhouses on the complex.

The Forestry Branch's Nursery staff gave numerous tours to both the general public and to school children. In addition to the tours offered during National Forest Week, some 350 people visited the facility to learn more about how tree seedlings are grown.

Tree Improvement

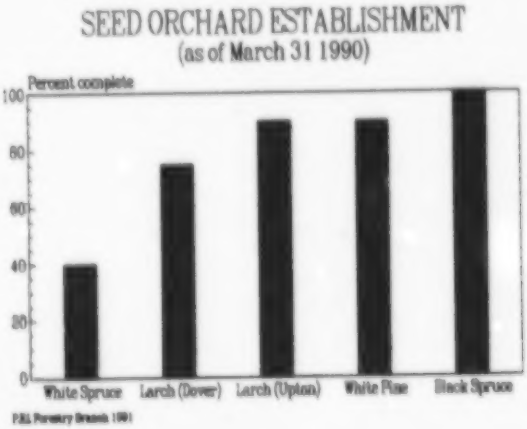
The main objective of the Tree Improvement program is to produce sufficient quantities of improved seed for use in current reforestation programs. This process involves the selection of superior quality trees from natural stands, and the establishment of cross breeding facilities capable of producing the improved seed.

"Plus" trees are selected for their superior qualities such as straightness, compact crown, health, taper, and growth rate. Scions collected in winter are used in controlled tree breeding programs.

Scions (twigs) are collected from these superior trees, and taken back to the nursery for storage. As soon as possible, each scion is grafted onto root stock produced at the nursery for this propose.

After several years of careful tending, the grafts are transplanted into orchards where they can be crossbred under controlled conditions. If the resulting seed is of superior quality, it will then be used for reforestation programs.

Due to poor scion quality in 1989-90, only 80% of this year's white spruce and red spruce grafts were completed. Seed orchard establishment to date is shown below.



Work also began on a Norway spruce provenance test, to determine how this species develops on a variety of Island sites.

Infrastructure work continued at the main seed orchard facility in Dover. Bridge and pond construction were completed, as was the installation of the irrigation system. All available seed was collected, a new weather station was installed, and site preparation and plantings were completed.

In order to ensure the health and rapid growth of these grafts, considerable effort was put towards site maintenance at Dover and the other orchards located at 48 Road and Upton Road. Plantation maintenance, and insect and disease inspections are carried out on an ongoing basis.

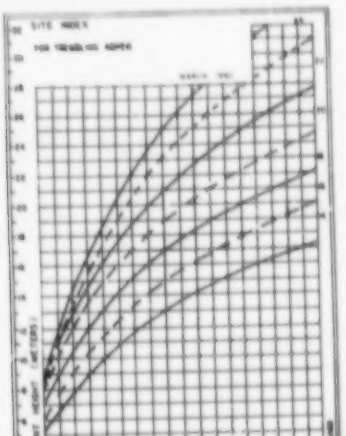
FOREST INVENTORY AND DYNAMICS

The Forest Inventory and Dynamics program has three main objectives: Improve the quality of Prince Edward Island's forest data base, improve the ability to upgrade that information, and improve the forecasting capability of the current wood supply model.

Preparation for the 1990 forest inventory continued with the establishment of 60 new permanent sample plots. These plots will be used to gather information on species, diameter, and height so that foresters can monitor the growth and development of the Island's forests.

Staff established 60 new Permanent Sample Plots (P.S.P.s) in a variety of different stand types, both managed and unmanaged. Each P.S.P. will be monitored on a five-year basis to provide information on the growth and development of Prince Edward Island's forest. The resulting information will be integrated into the forecasting model.

Site index comparisons for poplar were incorporated into the Forestry Handbook, and a new Prince Edward Island Local Volume Table was published. Volume tables can be used to determine the standing wood volume for commercial and biomass harvest operations.



Preparations for the 1990 forest inventory continued with the purchase of new computer hardware and software. Photo interpretation on test area photos was also completed as were the specifications for the 1990 forest inventory plots.

FOREST FIRE CONTROL

The prevention and suppression of wildfires in Prince Edward Island is the responsibility of the Forestry Branch. In 1989-90 a new integrated mobile radio system was installed to improve communication capabilities during an emergency. This system will allow fire fighters to communicate effectively with police, E.M.O., other fire fighters, and other agencies involved in emergency relief and fire suppression.

While forest fires continued to be a problem, the actual number of fires was down from 1988. Volunteer fire fighters recieved training in wild fire suppression techniques at two courses given by Department staff.

The Department conducted two wild fire suppression courses for volunteer fire fighters, and enhanced the companion teaching kit for the course. Public service announcements were released to television and radio stations during fire season to increase public awareness and promote the fire report phone number. Staff also provided fire prevention and liability information to Island blueberry growers.

An Atlantic Forest Fire Coordination committee was formed. This committee will endeavor to find methods of improving fire communication capability within the region.

While the number of fires reported during 1989-90 was lower than in previous years, 30 fires still burnt 194 hectares - mostly barrens and grasslands. The breakdown of fire cause, number and area destroyed is as follows:

Summary of Forest Fire Statistics for 1989

Cause	No. of fires	Area destroyed (ha.)
Recreation	1	0.5
Resident	0	0.0
Forest Industry	6	7.0
Railroads	0	0.0
Other Industry	1	3.6
Incendiary	13	149.6
Miscellaneous	4	31.4
Lightning	0	0.0
Unknown	5	2.4
Total	30	194.5

The Department also provided around-the-clock emergency fire fighting services for the 1989 Canadian Boy Scout Jamboree at Fort Amherst.

The watch tower at the center of the camp, provided an excellent vantage point from which to monitor fire potential. Forestry Branch staff provided round the clock fire fighting services.

INTEGRATED MANAGEMENT PROJECTS

As part of its commitment to multiple use management, the Department undertook several projects to enhance its ability to implement this management concept.

In 1989-90, an avifaunal survey was conducted to determine the impact forest management has on various bird populations. A bird identification specialist was contracted to visit several natural and managed stands, to determine differences in populations.

Central District staff assisted Prince Edward Island's Park Service with the layout and design of the cross country ski trails for the 1991 Canada Winter Games. The District let contracts for trail construction and the maintenance of the forest along trail edges.

Development work was completed on a forest/wildlife manual to provide staff with effective guidelines and procedures for wildlife management. This manual was initiated in response to the wishes of woodlot owners who expressed interest in increasing the potential of their woodlots for wildlife habitat.

Changes were made in the site preparation specifications of schedule "B". These changes allow forest managers to leave snag trees standing on site to provide nesting and feeding stations for various wildlife species.

Healthy trees growing along a water course help keep water clean, cool and productive. Forest management programs recognize the sensitive nature of such areas, and have been adapted to meet these needs.

The Department continued to support the Montague Watershed Management program by providing funding for forest management services in this area. Hardwood seedlings were also provided by the Department for reforestation projects within the watershed.

A new publication entitled, "Transplanting Hardwood Seedlings," was developed to provide the public with the information needed to successfully transplant hardwood seedlings from the wild.

Work continued on the promotion of the recreational values of forest management. The Valleyfield Demonstration Woodlot is rapidly becoming recognized as one of the best areas in P.E.I. to see a wide range of forest birds. This property has been actively managed for almost a decade and includes many different stand types, ground cover conditions, and management techniques.

The New Harmony Demonstration Woodlot played host to several cross country skiing events. The interpretive trails, road systems, and new ski trails, have been incorporated to make this woodlot one of the most popular skiing sites in Eastern Kings County.

TABLE 1
CROWN LAND IMPROVEMENT WORK
1989-90

		EAST	CENTRAL	WEST
Site Reclamation	(ha)	10	7	20
Slash Piling	(ha)	-	-	15
Wood Harvested	(cord)	600	304	1000
Trail/Boundary	(km)	-	4	1.6
Thinning	(ha)	-	5	-
Plantation Maintenance	(ha)	8	-	-
PROVINCIAL PARKS:				
Site Reclamation	(ha)	1.5		
Stand Improvement	(ha)	5.0		
Wood Salvaged	(cord)	60.0		

TABLE 2
WORK COMPLETED ON PRIVATE LAND
1989-90

		EASTERN	CENTRAL	WESTERN	TOTAL
Trees planted		693800	323300	379900	1397000
Site prep	(ha)	375	222	229	826
Plantation maint.	(ha)	151	19	145	315
Softwood thin	(ha)	49	50	52	151
Hardwood thin	(ha)	31	49	20	100
Site rec/slavage	(ha)	266	135	126	527
Roads built	(km)	35	24	30	89
Boundary	(km)	37	25	38	100
Bridges	(m2)	10	11	19	40

TABLE 3
WORK COMPLETED ON CROWN LAND
1989-90

		EASTERN	CENTRAL	WESTERN	TOTAL
Area planted	(ha)	50	14	64	128
Site prep	(ha)	105	40	62	207
Plantation main	(ha)	12	-	52	64
Softwood thin	(ha)	25	-	9	34
Hardwood thin	(ha)	4	2	1	7
Site rec/salvage	(ha)	66	7	5	78
Roads built	(km)	12	4	2	18
Boundary	(km)	-	7	20	27
Bridges	(m2)	10	-	-	10
Culverts		2	-	3	5

TABLE 4
OWNERSHIP DISTRIBUTION
ON P.E.I.

	Forest	Nonforest '000 ha	Total	% of Total
Crown lands				
Federal	2	2	4	0.7
Provincial	19	3	22	3.8
Private lands	257	292	549	95.5
Totals	278	297	575	100.0

TABLE 5
ESTIMATES OF PRIMARY FOREST PRODUCTION
FOR PRINCE EDWARD ISLAND
(000's m³)

PRODUCT	YEAR			
	1986	1987	1988	1989
Sawlogs	114	86	91	106
Pulpwood	46	55	46	66
Other Roundwood	-	28	28	28
Total Roundwood	160	169	165	200
Fuelwood	316	310	310	216
Fuel Chips	-	17	29	29
TOTAL PRODUCTION	636	665	669	645

TABLE 6
SEEDLING PRODUCTION
FOR 1989-90

Species	Special Projects	East	West	Central	Total
Red Pine	17,360	156,240	99,820	160,580	434,000
White Pine	15,120	55,440	17,640	37,800	126,000
Austrian Pine	7,590	8,970	26,910	25,530	69,000
White Spruce	16,350	94,830	75,210	140,610	327,000
Black Spruce	500	430,000	219,200	162,300	812,000
Larch	5,500	161,000	210,500	71,000	448,000
Balsam Fir	1,600	60,000	25,000	40,000	126,600
Totals	64,020	966,480	674,280	637,820	2,342,600

TABLE 7
SEEDLINGS PLANTED
1989

Species	Number planted
Red Pine	374,585
White Pine	71,564
Austrian Pine	67,311
White Spruce	248,986
Black Spruce	601,618
Eastern Larch	512,488
Balsam Fir	183,734
Total planted	2,060,286